improvement in gait at a single frequency, which was different for each patient while two patients showed optimal response at two frequencies. In SWS test, 17 (42.5%) patients had good response at 180Hz, 6 (15%) patients at 130Hz,14 (46.7%) patients at 90Hz, 5 (12.5%) patients at 60Hz.[table 1] Total FOG scores and subscores based on dual task also improved at similar frequencies.There was a statistically significant improvement (p value <0.0001) in all gait parameters including dual tasking at best frequency in comparison to device "off" and 130 Hz. [table 2] The optimal frequency was independent of any demographic parameters, disease severity or duration or other stimulation parameters.[figure 1]

Conclusions: Optimization of frequency setting for each patient can improve gait even with a cognitive load. Both higher and lower frequencies may be beneficial and needs to be individualized.

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Deep brain stimulation for Parkinson's disease: Short-term outcomes, referral patterns and health disparities

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Objective: To describe the practice patterns at University of Miami (UM), short term outcomes and health disparities among ethnic groups.

Background: Deep brain stimulation (DBS) has been shown to improve quality of life in Parkinson's disease (PD) patients. However, few studies have examined referral patterns for deep brain stimulation (DBS) patients from multi-ethnic communities.

Methods: Retrospective chart review from the University of Miami DBS referred patients.

Results: 195 patients have been referred for DBS surgery for PD at the UM from January 2014 to January 2016. After multidisciplinary team evaluation, 54 patients (28%) underwent BL STN DBS (n=49) or GPI DBS (n=5). The mean age at the time of referral was 66 years (+/-15). 61,2% patients were white, 35,1% Hispanic and 3.7% African American. The mean MDS-UPDRS score pre-DBS off medications was 48 (+/-16). At 12 months after the surgery the motor score improved 62.5% (DBS ON, MEDS ON= 18+/-7) With DBS ON, meds OFF mean MDS UPDRS was 23 +/- 8 (52% improvement). Patients also reported an overall decrease in levodopa equivalent daily dose (LEDD) from 999 (+/-461) to 633 (+/-331, 37% reduction). Surgical complications included 1 infection and 1 lead edema.

Conclusions: Despite the majority Hispanic and African American population in Miami, the referral pattern in this city includes mostly the white population illustrating the health care disparities among these ethnic groups. The disparity may be explained by poor access to movement disorders specialists in Hispanic and African American communities. All patients demonstrated significant improvement in motor UPDRS and a significant decrease in medication after DBS regardless of ethnic group. Efforts should be made?? to increase the access to DBS procedure among the Hispanic and African American population.

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Maximising decrease in dopaminergic drugs and increase in ON time following bilateral STN DBS using constant current for advanced Parkinson's disease

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Objective: To evaluate the decrease in Dopaminergic drug dosage and increase in ON time following Bilateral STN DBS using constant current for Advanced PD

Background: One of the significant advantages of Bilateral Subthalamic Nucleus DBS for Advanced Parkinsons Disease is significant decrease in dopaminergic drug dosage. The more the decrease in dopaminergic drugs following DBS, the more weapons left in hand for the future in the form of drugs and current. A standard protocol is putting the patient back on all pre-operative drugs immediately following surgery and then modifying the drug regimen slowly with time after switching the pacemaker on a couple of weeks post-operatively.

Methods: The author has been following a different protocol over the last six years of his practice. The author has been using constant current technology. Patients undergo pacemaker programming from the second post-operative day and are slowly programmed to non-dyskinetic levels. The patient is kept in hospital for around 7 days for further programming under observation. If they are able to walk normally without dopaminergic medications, their dopaminergic medications are no longer re-introduced. Most patients improve in tremor and rigidity following pacemaker programming but are unable to walk normally. They are first started on pramipexole (average of 1.5 mg/day) which generally gets them walking in most cases. If Pramipexole alone fails which is quite rare, levodopa is restarted at an average of 300 mg/day.

Results: Using such a treatment paradigm, 80% of the author's patients over the last six years have come completely off levodopa. The rest 20% have 70-80% decrease in dopaminergic drug dosage. An added benefit of switching off levodopa is complete disappearance of dyskinesias. The other benefit of switching off levodopa is a smoother ON with almost complete disappearance of ON-OFF. All the author's patients over the last six years are ON 24 hours a day without significant Dyskinesias.

Conclusions: Pacemaker programming and medical adjustment are crucial to success of DBS. Significant decrease in dopaminergic drugs can be achieved with proper surgery, skillful pacemaker programming and restarting/restricting medications from/to the bare minimum.

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Neuropsychological predictors of patient-reported cognitive outcomes following deep brain stimulation

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Objective: To identify preoperative cognitive performance measures associated with patient- and/or caregiver-reported cognitive decline following deep brain stimulation (DBS) surgery for movement disorders.

Background: Patients undergoing DBS for movement disorders can experience minor changes in cognition following surgery but multidomain cognitive impairment is rare. Neuropsychological predictors of patient-reported postoperative cognitive decline are needed.

Methods: We surveyed 60 movement disorders patients (49 Parkinson's disease (PD), 10 essential tremor (ET), 1 dystonia) and 52 caregivers (43 PD, 7 ET, 2 dystonia) regarding subjective impairment in memory, executive function, language, and visuospatial function 1 and 3 months after DBS surgery. Ordinal logistic regressions assessed the association between baseline performance on various cognitive tests and patient-reported domain-specific or simultaneous multi-domain (>1) cognitive decline after surgery.

Results: Lower baseline performance in individual cognitive domains was typically associated with cognitive deficits perceived by the patient after surgery in that same domain. Caregivers reported post-DBS cognitive deficits more frequently than patients, but often misclassified the effected domain. Multi-domain postoperative cognitive worsening at 1 month was most strongly associated with baseline recognition accuracy on the HVLT-R (all: p=0.002, OR 0.45, CI:0.23-0.75; PD: p=0.015); decline in reading speed on the SCOLP (all: p=0.002, OR 1.95, CI:1.26-3.00; PD: p=0.003), and constructional praxis on the Dementia Rating Scale (all: p=0.01, OR 0.17, CI:0.043-0.65). Multi-domain, patient-reported impairment at 3 months and caregiver-reported cognitive impairment at 1 month were also associated with baseline performance on these same tests, though caregiver-reported cognitive impairment at 3 months post-surgery was predicted only by baseline HVLT-R false-positive recognition score (p=0.034, OR 1.80, CI:1.04-3.09).

Conclusions: While performance in several cognitive domains prior to DBS surgery can predict patient-reported dysfunction in those domains following surgery at 1 and 3 months, multi-domain patient-reported cognitive impairment is most heavily associated with baseline verbal memory, degree of language comprehension decline, and figure construction.

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Cognitive safety of eight-hours adaptive deep brain stimulation (aDBS) in Parkinson's disease

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Objective: The purpose of this study is to assess the effects of eight-hours aDBS on neuropsychological functions in patients with Parkinson's disease (PD).

Background: Adaptive Deep Brain Stimulation (aDBS) promises better clinical motor outcomes than conventional DBS in PD patients.

An important issue before aDBS comes into practice is to prove its feasibility and safety.

Methods: 7 patients with PD [(mean±SD) age 61 ± 6.4; UPDRS 32.14 ± 13.22; 1 Female] and implanted with electrodes in the bilateral STN underwent cognitive evaluation to asses, language (Semantic and Phonemic Verbal Fluency, Naming, Repetition), memory (Word Recognition Task) and attention (Simple Reaction Times, RTs) at baseline T0 (aDBS off, Drug treatment off) and after eight-hours T1 (aDBS on, Drug treatment off). The assessment was conducted 6 days after surgery and patients were stimulated with an external aDBS device.

Results: There was no significant cognitive change after aDBS [(mean±SD; T0 vs T1) Semantic Verbal Fluency 12.3 ± 3.3 vs 15 ± 3.4; p=0.12; Phonemic Verbal Fluency 10.4 ± 3.7 vs 9.7 ± 1.8; p=0.56; Naming 19.7 ± 0.7 vs 10.6 ± 0.8; p=0.36; Word Recognition Task 19.7 ± 1.6 vs 19.1 ± 1.6; p=0.28; RTs 447.6 ± 78 vs 426.1 ± 50; p=0.36]. No errors occurred during words and sentences repetition task. Also, no significant change of UPDRS total score was observed after eight-hours aDBS. UPDRS total score improved by about 50% after eight-hours aDBS.

Conclusions: Our data show that eight-hours a DBS in PD patients failed to influence their cognitive performances. These findings can help the discussion about the safety of aDBS.

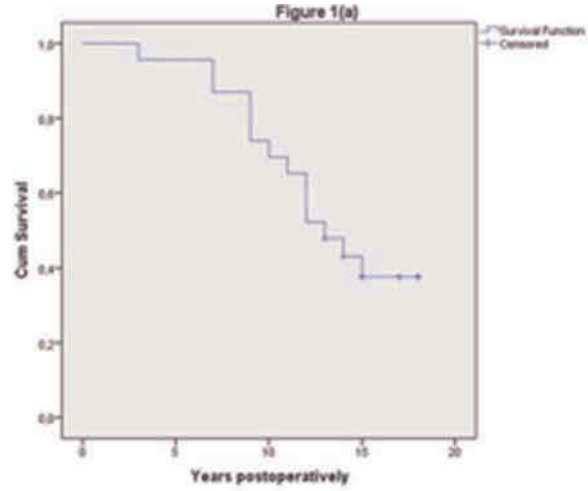

Fig. 1 (337). Kaplan-Meyer survial plots in respect to survial in 23 advanced Parkinson disease (PD) patients operated with nucleus subthalamicus deeo brain stimulation (STN DBS) at time O.

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Effect of deep brain stimulation of the subthalamic nucleus on cranial tremor in Parkinson's disease

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Objective: To analyze the effect of deep brain stimulation (DBS) of the subthalamic nucleus (STN) on cranial tremor in Parkinson's disease (PD).

Background: STN DBS has been shown to improve appendicular tremors significantly. While bilateral thalamic (VIM) DBS has shown some benefit in essential tremor, little is known of improvement in cranial tremor with bilateral STN DBS. A study of 13 patients with essential tremor found that bilateral thalamic DBS was more effective than unilateral DBS at controlling appendicular and midline tremors.

Methods: We utilized a secure electronic DBS database to search all PD patients who have undergone DBS of bilateral STN at University Hospitals Cleveland Medical Center and analyzed changes in cranial tremor from the UPDRS pre and post DBS. We compared the numerical value of cranial tremor documented on the UPDRS immediately before surgery as well as 3 and 6 months after surgery. We excluded patients with unilateral STN DBS, or those patients who have had undergone DBS lead replacement surgery.

Results: We analyzed 71 PD patients who underwent bilateral STN DBS. 20/71 (28.2%) patients were found to have had cranial tremor prior to DBS. 20/71 patients (85%) showed an improvement in cranial tremor 3 and 6 months after DBS. Two (10%) patients were noted to have had the same intensity cranial tremor pre and post DBS. One (5%) patient's cranial tremor was noted to be worse at 3 and 6 months after DBS. Three (4.2%) patients developed a cranial tremor at 6 months post DBS. Sub analysis data is being collected for positioning of DBS lead contacts to better understand the anatomical location at which cranial tremors show the most optimal improvement.

Conclusions: The majority of PD patients who had pre-surgical cranial tremor improved after DBS. The likely explanation for tremor development after DBS is disease progression. Further knowledge on cranial tremor improvement from STN DBS can assist physicians in counseling patients regarding likely benefit from DBS. Our next step is to compare lead placement with those patients that had cranial tremor improvement versus no cranial tremor improvement.

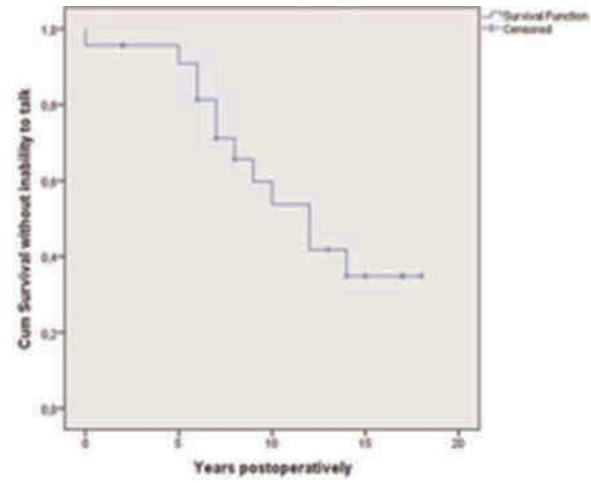

Fig. 2(a) (337). Survival without dementia.

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Key clinical milestones 15 years and onwards after DBS-STN surgery – a retrospective analysis of patients that underwent surgery between 1993 and 2001

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Objective: In this paper we investigated patients with advanced Parkinson's disease (PD) operated at our center with subthalamic nucleus deep brain stimulation (STN-DBS) for at least 15 years ago, in

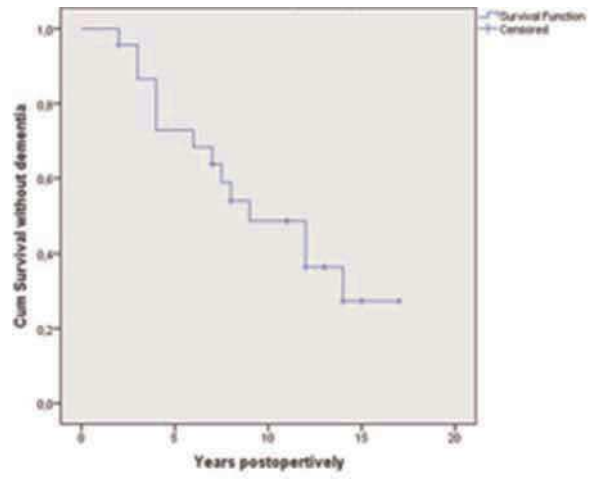

Fig. 2(b) (337). Survival without inability to talk.